Notebook Series -- Notebooks by Experimenters Other Than Edison
General Experiment Books -- Z. P. Halpin Books
Notebook, N-14-07-26

This notebook was used by Zachariah P. Halpin during July-December 1914 for experimental notes on a variety of subjects. Included are entries pertaining to equipment for home kinetoscopes, such as lamps and generators, and to film cement. There are also several references to the super kinetoscope. In addition, there are tests of disc and cylinder phonographs and miner's safety lamps. The notes indicate that Joseph Whelan assisted with the experiments and that Halpin reported to Thomas Edison, Charles Edison, Miller Reese Hutchison, and the Engineering Dept. Committee. Several entries contain notations regarding Edison's comments and instructions. The front cover is labeled "Tests and Notes." The flyleaf is inscribed "Zachariah Power Halpin" and "Joe Whelan." The book contains 97 numbered pages followed by an index of 5 unnumbered pages; pages 67-95 and 97 are blank. The index has been filmed first.

FILM, CEMENT and OTHER MISCELL.

"BRIFCO" - WEAR TEST - 1.
FEASTER DEVICE 9.
MINERS LAMPS - LIFE 11.
ACETYLENE GENERATOR 13.

DISC PHONOGRAPH TESTS
Governor Sleeve - Dust Test

CYLINDER PHONOGRAPH.

HOME RECORDING INSTR'NS 7.

MODEL D - P.K MACHINE

MOTOR DRIVE	2.
TRANSITE - LAMP HOUSE	3.
RHEO. & TRANSF. INSTR'NS	6.
EXTENDED FILM RUNNERS	8
BELT DRIVE TAKE UP	10.

1915 MODEL P.K. MACHINE.

TRANSITE TEST - HEAT. 4.

60912

Home Co.,

MFG. STATIONERS,
96 JOHN ST.
AND
19 PLATT ST.
NEW YORK.

Zedekiah
Z. Powell Halpin
See Wills

Wear Test British Film Co. Film
Trade Name "Brifco"

Received from Kennedy 8/7/14.
Length of piece –

Started wear test 8/12/14 P.M.
on Motor Driven P.K. with regular
film gate.

8/13/14 10 am.
20 times film O.K.
8/14/14. 45 times O.K. –
8/14/14, 78 times two perforations
slightly cracked in every
picture.
114 times – cracks increas-
ing.
8/15/14 115 time film broke about
2" of perforations gone
and general increase in
cracks – Stopped test to
report to Kennedy.

Reported – Aug 17, 1914.

Motor Driven Model D - P.K.

Removed take-up bracket with steel bushing bearings 8/8/14 after running 447,000 ft of film. no wear apparent.

Placed on take-up bracket with long cast iron bearings 8/8/14.

8/12/14 - 1000' film has been run 55 times = 55000

8/12/14 - changed to "BRIFCO" short piece ft.

8/15/14 Have run Brifco 115 times 115 x 250 = 28,750

8/15/14 - Started again on old film (Stock)

Transite in Model D Lamp House

Started 7-26-14
Stopped 8-11-14
Ran 88 hours during test and transite showed no signs of deterioration.
Used 3/4" carbons 40 amp rheo. on 40 amp. point.
Stopped test as Mr. Luhr needed the lamp house to make some changes relative to doors.

Note - This is the new model lamp house with hinged top and front and back doors.

Reported at Eng. Meeting 8/12/14.

Test Completed 8/11/14.

Transite Test on 1915 Model.
3/4" carbons 60 to 80 amps. ave.
70 amps.
Using two 40 amp. rheos. in parallel

Started 8/7/14.
To 8 a.m. 8/13/14 27 hours
Transite O.K. no signs of deteriorating

At Engineering Comm. Mr. Nicolai recommended raising the arc as near the top as possible. This was done 8/12/14.

Mr. Fuhr suggested putting in larger carbons — but we are unable to get same unless we order them specially — 8/17/14.

Governor Sleeve Test on
A-150 Old style
A-250 New style.

Reported to Mr. Edison 8/12/14.
Copy in files.

Started 7-9-14.
Sprinkled governors with lamp black, chalk and flour. as per table.

Results do not show any improvement in the new over the old.

8/14/14 Awaiting reply to Mr. Edison's report.

Rheostat and Transformer Instructions.

Status - Aug 13, 1914 -
Prints made
Broply making diagrams.
No write up yet.

8/13/14 Broply made diagrams of wiring for R. and T.
Started write up.

Instructions for Home Recording on amberola Machines.

Have not started yet - can't get the times 8/13/14.
Repeated to M. R.H. that I could not get at this.

Extended Film Runners.

Discontinued test after running 1000 ft. film 377 times - because runners show wear and Mr. Davis reports that there is no improvement in the projection with the runners. Consequently it was decided not to adopt the suggestion for improvement, at the Eng. Comm. Meeting 8/12/14.

note - also complicate matters in limited space around intermittent sprocket.

For complete analysis see reports on file and Eng. Comm. reports.

Stopped 8/12/14.
Matter closed at Comm. 8/12/14.

Feaster Non Rewinding Device.

See reports to Eng. Committee of dates Aug 5 and 12, 1914.

Aug 13 - now being used by Curtiss in adapting it to 1915 Model.

Aug 14 - 1914 - Curtis took Feaster down to drafting room.

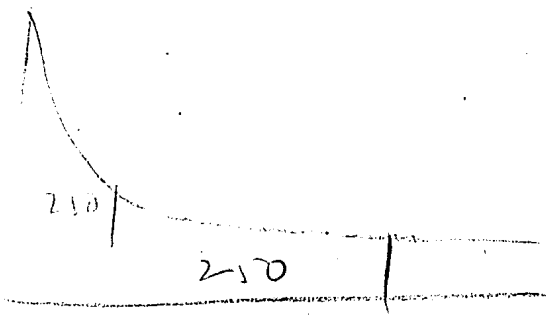
Belt Drive on Model D.

See report to Eng. Comm. made 8/5/14.

Aug 13, 1914 - Troubles are being rectified for continuation of test.

Aug 12 - up to Simpson.

Aug 20. - Rec'd from Simpson ~~new~~ corrected magazine Shoulder projects more into magazine I Set up 8/20/14.
Aug 21 - Received sample reel from Sharlow Bros.
Aug 21 - Placed new reel in lower magazine and ran 2000' film from above - reel failed to take up on account of its sides being sprung



Miners Lamp Life Tests.

Started - July 20, 1914

See "Lamp Book" for record of test.

Mc Caudle	D-1	3v.	—	43
" "	D-2	3v.	—	89 hrs.
" "	B-1	2.8v.	—	225 hrs.
" "	B-2	2.8v.	—	318 hrs.
G.E. 1000	C-1	2.6v.	—	
" "	C-2	2.6v.	—	
Austrian	A-1	2.4v.	—	460 hrs
"	A-2	2.4v.	Out 2.	475

Aug 13, 1914	8 a.m. 161 hrs.
" 14,	8 a.m. 171 "
" 15	8 a.m. 181 "
" 17	8 " 185 "
" 18	8 " 195
" 19	8 " 205
" 20	8 " 215
" 21	8 " 225.

New Film Cement Test.

Started 8/13/14 on Exhibition model (motor driven) with 6 ft. loop alternating with new and old cement joints.

	Loop	Old	Hours	Min.	Times.
	1	Old Cement	1	30	900
Average 3-18	2	" "	8	12	4920
	3	"	0	40	~~400~~
	4	"	1	15	750
	5	"	8	22	5020
	6	"	1	10	700
	7	"	1	30	900
	8	"	1	55	1150
	9	"	6	55	4155
	10	"	1	35	950
Air 1 hr 20 min.	1	New	1	23	830
	2	"	0	10	100
	3	"	0	25	250
	4	"	1	08	
	5	"	0	50	
	6	"	1	15	
	7	"	0	57	
	8	"	2	35	
	9	"	1	30	
	10	"	3	07	

see p.23

acetylene generator.

at Comm. meeting 8/12/14, I was instructed to get up some samples in short to help Cheshire in any way he wishes.

8/14/14 — See Cheshire when able.

8/14/14 — Rec'd 8 acetylene Generators
Tested two
No 1. outer can leaks, also air valve.
No 2. Inner can defective.

B and L. sample Condensers

6 1/2" Focus ran 1/2 hour on 8/7/14 broke on first cooling without fan.

7 1/2" Focus ran 20 hrs. cooled 6 times per day with fan. did not break.

Mr. Warner said to stop test as it was considered of no value.

Closed 8/12/14.

A-100 Model Phonograph.
Received - 8-13-14 5 15 P.M.
Found all recommended changes have been made.
Made tests comparing with A-150 and B-80 - Mr. Luhrs, Simpson, Curtis and self.
General opinion is that the horn qualities are poor.
Called Mr. E's. attention to fact - He will test himself.
When he looked at horn he said it was not right.

1. Found not enough clearance bet. top plate casting and screw in barrel.
2. Spring jumps when winding
3. Muting attachment muffler when out and not effective enough when in.

Test made 8-14-15. at 4 P.M.
10" Records - 80-80-80-80-40
78-78-78-78-39
74-66

12" Record 80-80-80-80-80-80-40
78-78-78-76-73

E1. Motor Drive – PHONOGRAPH.
Go and see Langley.

General opinion to date is that regulation is O.K.
Langley thinks the motor performance O.K.
Afraid that the suspension is poor causing vibration of mechanism – difficult to get rid of.

Wear Test on 2 Min Cylinder Rec.
Panama Canal Exhibit

Started – 8/2/14
Stopped – 8/14/14 about 80 hrs
Record is badly cut up.
no. of times approx 2400 times
Sapphire appears O.K. under microscope.

8/14/14 ~~9 45 A.M.~~
Started new record with
"~~Mg. Oil~~" on surface. 10¹⁵ a.m.
"Hyoil" – Stopped 5¹⁵ = 7 hrs.

8/15/14 no run

8/17/14 started 9 a.m.
Cleaned record with cheese cloth
and put on fresh oil.
8/20/14 10 a.m. Stopped test to
use machine on regular Blue
umbrella Mar Test.
8/14/14 – 7 hrs.
8/17/14 – 8½
8/18/14 – 9½
8/19/14 – 9½
8/20/14 – 1
35 hrs. record in good cond.
when stopped.

A-100 from Page 15.

8/17/14. 10" Rec. 80-80-80-80-40
79-79-79-79-39+
78-75

This is O.K.

8/15/14 Hayes sees only difference in quality.

A-100 - Has been running continuously since 8-14-14 8 am.

8-14	8½	8-21	8½
8-15	4	8-22	4
8-16	8½	8-24	8½
8-18	8½	8-25	8½
8-19	8½	8-26	4
8-20	8½.		

8-21-14 12 M

10" record 1. 80-80-80-80-40
Gollilec 2. 79+-79+-79+-79+-39+
3. 78-76

8-21-14 - Discussed with Chas. Edison. Called his attention to how when he requested my opinion. He thinks it would be a good idea to make up Model-150

page 21.

Stock Phono Test No. 27
Machines Rec'd. 8/17/14, 4^30 P.M.
Twenty four Hour Run finished
8/21/14 4 P.M.

Preliminary Report Aug 25/14

Final Report to Mr. Edison
Wilson, Leeming & Lab. Off.
Thursday Aug 27

10 days altogether.

Preliminary report held
up two days.

Amberola V -
New Instructions.
Memo Rec'd. 8-17-14.

A-100 Model cont. from p. 18.

A-250 and A-200 to see if present horns and cabinets can be used. It may be under consideration of T.a.E. Inc. to change the cabinets - ?

On Aug 26, 1914 - Main spring broke on inside.
Aug 27/14 Notified Mr. Nicolai who sent up man to repair. Man had diffiuelty with outer spring hook on barrel casing. This brought out a defect which has been noted and will be taken care of.
Spring .025" x 1.5" x 30'.

Mr. Nicolai wanted to put in .028 x 1 9/16 x 21' — found to be too heavy and prob. would not play as long.

Aug 28, 1914 New spring put in and machine turned over again to laboratory. (See p. 27.)

Aug. 27. 1914.
Constable asked me to test new cylinder reproducer Mr. E. told him to ask me to test.
We tested together and decided that new reproducer was not a good as model of standard (Hayes')

I thought that trouble must be in diaphragm and accordingly Constable put Hayes cup and diaphragm with his weight and point and result was o.k.

I don't see how mechanical change such as is in Constables reproducer can affect the reproduction if the parts are all free as he uses same point and arm and also same diaphragm and weight. Care should be taken of course that the weight is not changed

Film Cement Test.

Average of 10 loops.

Stock 3 hr. 18 min 1980 times
New – 1 hr. 20 " 800 "

Results evidently differ with claims for this cement.
We tried to follow instructions as given by Mr. Kennedy, but evidently our sample was not efficient.
As we can only judge from our results. It appears that Cement Tested is inferior to our regular stock cement.
It might be good idea to hear other side of argument.

Cement is thin and runs away – and had to press

and altogether gave considerable trouble, Had to allow to dry.

Reported Aug 28, 1914
to MR.H.
See File.

Triumph Phonograph.
Model F.

On this model there is very little clearance between under side of record and bracket beneath.
This was detected by white submaster record touching the bracket.
Could not find accurate method of measuring so proceeded as follows.
Consider white record as a gauge – measure diam.
Radius = ½ diam
Measure diam of blue commercial record
radius = ½ diam

Clearance = "White" radius less "blue" radius

8 White records were measured with 2 to 3" micrometer.

For You Alone	2.223"
The Setting Sun	2.223
My Croony Melody	2.220" - 2.219"
A Little More Pepper	2.221" - 2.220"
Humpty Dumpty	2.223" - 2.223"
Dear Spirit Lead Thou Me	2.220" - 2.220"
Since I am your Auntie To Be	2.220 - 2.218
Alice of Old Vincennes	2.218 - 2.220.

Average of above 2.221."

Eight Blue Records

1821 - 31	2.169
2285 - 2	2.169
2379 - 1	2.175
2388 - 10	2.171
1798 -	2.175
1743 -	2.175
1838 -	2.170.

Average = 2.172

$$\frac{2.221 - 2.172}{2} = \frac{.049}{2} = .0245"$$

Clearance = .0245"

Reported to T.A.E. 8/28/14.

from page - 21.

A-100 Disc Phono Model.

I reported to Mr. Edison at his request Sept. 4, 1914. A copy of report is on file. Mr. Edison wrote certain comments on the various items and forwarded the report to Mr. Nicolai. I did not see Mr. E's comments but I know that he differed with me about the horn quality and the muting device. He thinks horn quality good enough. I do not think it is and this was in my report (see copy on file.)

On Sept. 9, 1914 Mr. Lewis sent up for the model which was turned over to him on this day.

From page — 22.

Received 6 new cylinder reproducers. Mr. E asked me to test these and when through turn over to him.

These 6 reproducers are made up after Constables model.

The numbers are as follows

14376. — 1
99250 — 2
70320 — 3
70967 — ~~4~~ 6
106831 — ~~3~~ 4
103172. — ~~4~~, 5
Standard — 84763

Sept 16, 1914.

I tested above reproducers and came to the conclusion that all were weaker than the standard. I rated them as follows

No 1. — not quite as full as standard
No 2. — same as no 1.
No 3 — not as good as 1 and 2.
No 4 — same as no 3.
No 5. — same as 1 and 2
No 6 — same as 1, 2 and 5.

Motor Driven Model D - P.K.

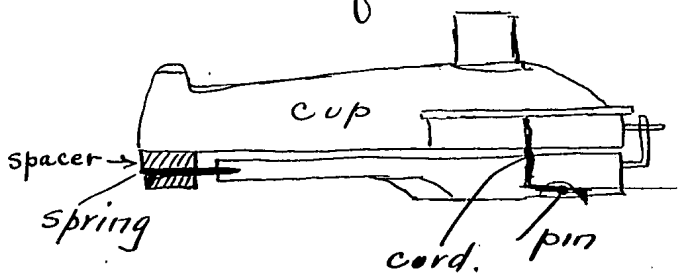
Rheo. C.H. 125 V. 100 ohms
min. field resist. Cat
Max ohms 1.5 - .75.
Serial No. 249492 (247492)

Mr. Edison picked out the regular reproducer from 8 trials and made the following comments.

Trial	1 –	No 1	weak.
	2	Standard	loud buzzy.
	3	No 2	weak
	4	No 3	weak
	5	Standard	loud
	6	No 4	weak
	7	No 5	fairly loud
	8	Standard	~~wo~~ loud.

Weights	Effective	Free.
No 1	57.5 –	
2	59.2 –	97.110
3	56.0 –	
4	54.0 –	
5	54.5 –	
6	40.5 – 38.0	97.180
Standard 84763	47.5 –	98.57
Standard 106837	52.5	
Standard 104543	51.0	

Discussion of Measurements.



	No 2	No 6	Stand
Spacer	.126	.121	.179
Spring	.008"	.008"	.008"
Swivel pin for diam. pt	.027"	.027"	.027"
Diaphragm cord	12/64"	12/64"	12/64"
Effective weight	59.2	40.5	47.5.
Free weight	97.110	97.180	98.57.

On No 6 the spring seems ~~to~~ be bent up slightly which evidently loads up part of weight and accounts for the wide difference in effective wt..

Stock Reproducers.

Mr. E. wanted 6 stock cylinder reproducers - newest stock.

These were obtained 9/21/14.

106961
103370
78642
107593
105701
105166.

Mr. Edison tested these on blind test rating each reproducer as used.
For standard Hayes' cyl. reproducer was used the no of this is 52708.

Mr. Edison gave following ratings,

1 —	78642	100%	
2	52708	110%	
3	106961	95%	dull
4	52708	95%	"
5	103370	110%	clear
6	52708		
7	107593	115%	clear & good.

Mr. E was surprised that standard was poor second time it was played

He attributed this to the loose rubber tube connection. and said to tighten same and he would repeat his test.

Sept. 22/14. 33.

Disc Die Cast Reproducers

Two models
Nickel plate no 1
Oxydized no 2.

Effective weights –

No 1 – Nickel	104.5	grams.
No 2 – Oxyd.	106.5	"
Standard 43543	100.5	"

In comparing these with standard no 43543 it was clear that there was a difference.

The test reproducers (die cast) seem to be a little softer in tone, not quite as loud and tone is dull compared to stand. I would say in general they are of inferior quality.

Disc. A-250. Photographs.

No-1 outside of case.
No 2 – cover off nearly full view
No 3 – 2 men removing cabinet from case,
No 4 – cabinet half out of case
No 5 – mechanism cradle out of packing case
No 6. Showing bottom to remove screws
No 7. Showing cabinet in cradle
No 8 – Taking cradle top and showing front door open –
No 9 – Showing top of cabinet up – grille inside paper on horn stem,
No 10 – Showing all parts in mechanism cradle.

125
150
60
150
10%
40%

11 — Showing back of cabinet

12 " front view of cab. showing ball in, set screws for horn lifting knob.

13 — Top view with turn table showing —

14. Filing System.

Copy of Report on grooved records — made to Mr. Edison
Copy to Chas Edison

Six special disc records (with circular groove cut in to prevent diamond from sliding onto table at end of record) were submitted for test.
Three of these were tested as follows:
The automatic stop was set so that it allowed record to turn ten times between the time the diamond entered the groove and the time the machine stopped

No	Times Tested	Total No of turns made in groove	Remarks
1	180	1800	Diamond began to run over
2	421	4210	"
3	255	2550	Groove showed wear Diam did not run over.

The results indicate that the groove works effectively during the life of the groove.

The life of the groove varies in different records

The use of the groove simplifies the setting of the repro-~~ducer~~ automatic stop.

Instead of having record turn ten times with diamond in groove it could be set say at 5 times which would increase the life of the groove.

If the groove life proves long enough and is easily manufactured it would prove of great assistance to the automatic stop and would eliminate to a large degree injury to diamond caused by running on the rough label, and it stops the loud disagreeable noise caused by so running on.

Disc Reproducers.

Saturday Oct. 17, 1914 Mr. Edison instructed me to test disc reproducers as follows:
Run each repr. 250 times over 1/2 inch of discarded band record.
Report on cutting.
Get a girl to run four disc machines to test four re-producers at once.

Each time takes 1 min.
250 " " 250 "
250 minutes = 4 1/2 hours.
with four going at once this would mean 4 every 4 1/2 hours or 8 during 9 hrs.
Our day - 8 1/2 hours.

Joe can handle 3 machines but four I think would be too-many for a girl.

A-100 Model
A-150 " (new)
A-250 (new)

These models were recd. Nov. 16 1914 a.m.

① The A-100 Model has ~~the~~ new horn
② Has new disc damping device in place of muting ball.
③ This has also single barrel spring

A-150 & 200 — Special Cabinet
This special cabinet is 1/4" less from ~~shelf~~ floor of horn compartment to inside of cover than ~~the~~ the present A-150.
The pressed steel top plate is too long to go into 150 cabinet and ~~therefore~~ this special cab. is used to illustrate. It has the A-150 horn.

A-250 - Has double barrel spring and new muting ~~movement~~ using same

muting ball – This movement is the one recently adapted for fancy cabinets such as 175, 190 etc.

Tests.

A-100 with Dreams of Galilee –

1. 80-80-80-80-40
2. 79-79-78-78-39
   33 slows down.

Test made Nov. 17, 1914.

A-100 with Dreams of Galilee.

1. – 80-80-80-80-40
2. 79-79-81-81-41
3. 37 (½ min)

This A-100 is not the same as the one previously test it has the new pressed steel top plate and a different gear ratio is. it is now 51 to 1 instead of 50 to 1. ~~as previously~~.

The old 100 model is now assembled in the new 150 style cabinet.

A-150 Model.

(1) This is the old A-100 mechanism in a new sample cabinet.
~~It dif~~ This cabinet has 1/4" less ~~clear~~ height from floor of horn compartment to inside of cover than present A-150 cabinet.

(2) In this assembly it is noticed that the horn differs slightly from present A-150. It has the same bell but the other part is different. May be equal in tone?

(3) The turn-table sets too low ~~too~~ near top plate and therefore does not give clearance enough for starting and stopping levers. It touches when running.

(4) The spring has some chug or jump when winding as it previously had in A-100 cabinet. To me this is a serious objection and must

or rather should be overcome.

The horn is adjusted to set too high so that the reproducer weight sets too low and limit pin lies too low in limit loop. There is not ample clearance to make this adjustment satisfactorily.

I was of the opinion that the new 150 model would have two springs but this is not the case.

I made a test with ~~to~~ Old Kentucky home. Played two times speed dropped about 2 revolutions and had no margin over. two seconds. During this test turn-table was not touching the starting or stopping lever.

See 2nd p. following

A-250 Model.

Different horn - same bell but longer stem - and curve in stem different shape.

Top plate comes too near top of cabinet.

~~Has two~~ barrels instead of 3 as anticipated

Springs chug or jump when winding.

10" Record Galille.

1. - 80 - 80 - 80 - 80 - 40
2 - 80 - 80 - 80 - 80 - 40
3 - 80 - 80 - 80 - 80 - 40
4 - 79 - 79 - 79 - 79 - 39½
5 - 73.

A-150 Model.

Galillee —

1. 80 - 80 - 80 - 80 - 40
2. 79 - 79 - 79 - 79 - 39.
3. 74

11-18-19.

Disc Reproducers
Stock Tests.

Special Disc Reproducers.

No 1 – Die Cast – with new spring connection (Constable) – Nickel Finish – (one of two originals)

No 2 – Die Cast – same as no 1 Finish Oxydized.

No 3 – Die Cast with special punched diamond arm and regular spring connection.

No 4 – Die Cast with regular spring connection.

No 5 – same as No 4.

No 6 – same as no 4.

No 7 – Regular brass weight with new spring connection

Superkinetoscope Transformer

P.K. Condenser Test.

Three condenser mounts were tested –
1. Regular.
2. Heavy Brass – Brass supposed to allow heat to cool slowly on account of its mass.
3. Plate glass in front of regular mount.

After two days test none broke but on final cooling the one with plate glass was found broken

Heavy Brass mount was dropped at Eng. Comm. meeting of Oct. 19

Continuation of test with other two
Regular
and Plate glass.

page 53.

Film Cements.

To compare several samples of different film cements with regular stock.

Test consists of running six foot loop with one joint through Exhibition Model machine until joint breaks

Each sample is numbered ~~as follows~~:

1— 582-587-601-602-603
589-600-591-580-592

603-4 Rec'd 11-24-14

Reproducer Testing Machine:

Red's Record Index.

Reported to Mr. E. 11-23-14 that board resolutions have been established also explained the reasons and described the new file now used.

Copy of report on file.

A-250 Disc Castors.

Nov. 24, 1914.

I looked at 3 or 4 machines in lab. and in each case found castors O.K.

I went to Rec'd. Testing Dept. on 2nd floor of 24 Bldg. and looked at 5 or 6 machines with leather castors.

I found 1 defective caster in which the leather was loose. and I found one machine in which the leather was worn ~~all~~ almost completely off. These machines in 24 bldg. are on cement floors so it is not fair to judge them for wear as machines will invariably rest on wooden floors.

Further it is not known how long these castors had been on or how much the machines had

been moved about.

Ran one set from 11 am to 12M and from 1 to 2 – 2 hours. 2 leathers became loose out of four.

At 2.40 P.M. Put in a new set (complete)
at 3.20 P.M. Two leathers loose and bearings loose –
Returned to test 3.40
Stopped test at 4 P.M.

One roller would not turn.

Friday Nov. 27, 1914.
Tests on Superkinetoscope with 60 to 80 amp. Transformer.

1. Regular condenser mounts with plate glass in front of 6½" cond. – broke plate glass in about 3 min. 35 v. & 80 amp.

2. Replaced regular mounts with special heavy brass mounts with plate glass between arc lamp and 6½" cond.
Plate glass broke in 2 min.
80 amps. 35 volts.

3. Tried heavy brass mounts without ~~special to~~ plate glass and it ran 30 min. when 6½" condenser cracked with light still on. Apparently no draught in lamp house.

4. Replaced broken condenser with new one and reduced current to 60 amperes. Ran ½ hour – four times – allowing condenser

to cool under normal conditions - did not break any condensers.

These Tests were made by Joe Whelan.

Test of a governor made with condensite-graphite buttons instead of usual ivory with felt inserts.

Governor was put on A-150 Disc machine used for testing stock reproducers - this machine is run continuously from 8 a.m. to 5 45 P.M. except from 12 00 M to 12 50 P.M or 9 hours per day. Except Sundays & Saturdays (4 hours)

Reading of speed is taken each day and recorded

Started 9 a.m. Nov. 12, 1914

Readings

Nov.	12	9 a.m.	80	
"	12	4 P.M.	81	9
"	12	4 15 "	79	
"	13	9 a.m.	78	9
"	13	4 P.M.	78	
"	14	10 a.m.	80	4
"	16	10 a.m.	79	9
"	16	10 "	79	
"	19	11 30 "	79	9
"	18	10 "	79	9
"	19	10 45	78	9

58

Nov. 23	9 a.m.	79 — 9	
" 24	9 a.m.	79 — 9	58
" 25	9 a.m.	79 — 9	49
" 27	9 a.m.	79 — 9	107
" 28	9 a.m.	79 — 4	
" 30	3 P.M.	79 to 80 . 9	

67
40

H.P.R. Lamp House.
Heat Test of Lamp House for M.R.H.

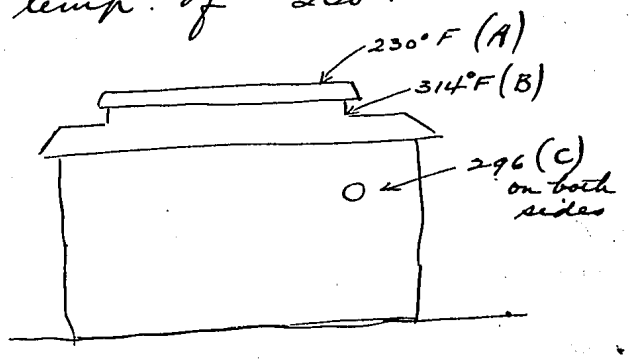
Requested to make test for with arc consuming 500 watts —

This was construed to mean normal working conditions i.e. taking about 500 watts from line.

D.C. Test.

11-30-14	VOLTS	AMPS	Watts.
3.55 P.M.	110	5.2	573
4.00	109	5.0	545
4.05	109	5.0	545
4.10	109	5.0	545
4.15	109	5.2	566
4.20	109	5.0	545
4.25	109	5.0	545
4.30	108	5.2	562
4.35	107	5.2	556
4.40	105	5.2	546
4.45	105	5.2	546
4.50	105	5.0	525
4.55	104	5.0	520
5.00	105	5.0	525
5.05	105	5.0	525
Ave.	107.2	5.08	545

During this run the top of lamp house reached a temp. of 230°F



Small piece of paper placed ~~at~~ on top (A & B) of lamp house did not ignite during the test.

a. b. Test of Lamp House.
12-1-14.

	V.	Amps	VxA	Watts	P.F.
850 AM.	120	5.7	685	390	.57
855	122	5.5	672	365	.54
900	121	5.0	605	350	.58
905	121	5.4	654	380	.58
910	121	6.0	726	360	.50
915	121	5.8	703	400	.57
920	121	5.8	703	400	.57
925	121	5.3	641	385	.60
930	121	5.6	678	390	.575
935	121	5.6	678	395	.580
940	121	5.9	714	385	.54
945	121	5.9	714	390	.545
950	121	5.9	714	390	.545

Temperatures ~~[illegible]~~
at A = 356
" B = 402
" C = 365

Small piece of news paper placed on ~~top~~ of lamp house did not ignite during hour of run but scorched a little.

Superkinetoscope Transformer.
110 V 60 - 80 AMPS 60 cycles.

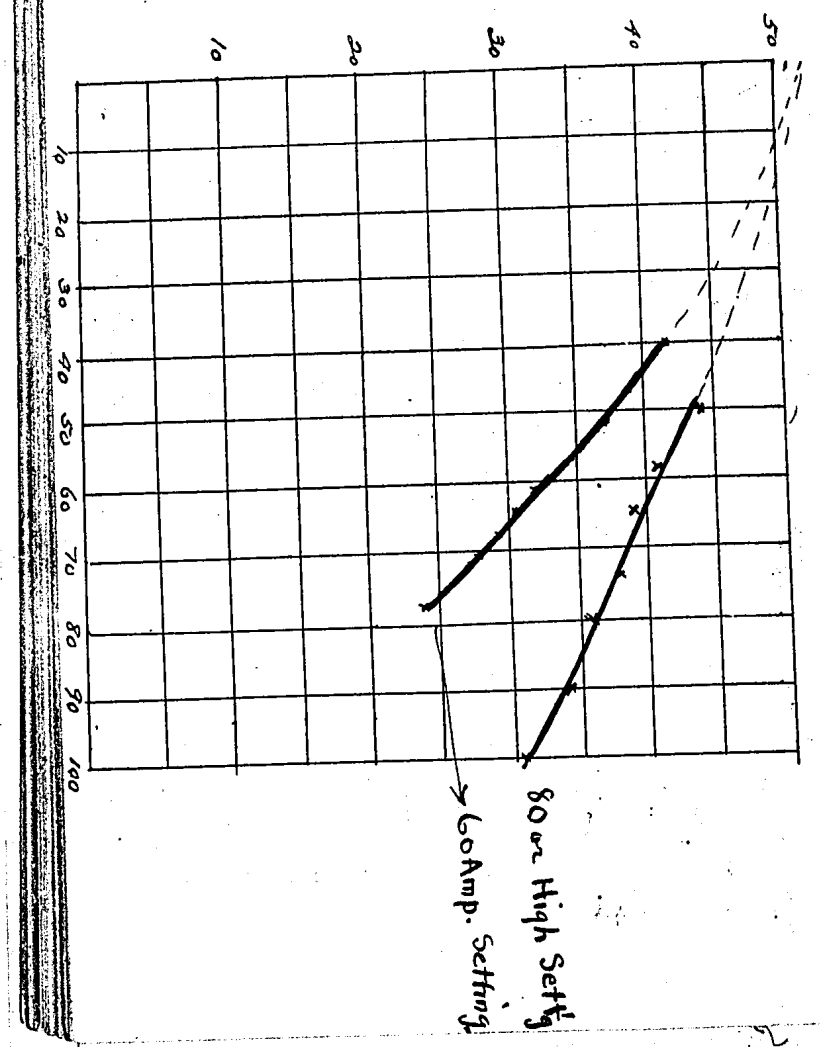
Some meter readings made by Norton and myself Dec. 1, 1914.

60 or Low setting –

Amps	Volts.
77	24
76.2	24
74.2	25.5
72.3	27
70.5	28
68.	29.5
64	30.5
61	32
53	37
51.5	37.5
47	39
40	41.5

80 Amp. or High.

AMPS	Volts.
95	32
88.7	34
85	34.5
80	36
70	38
60	41
100	30.5
95	32
95	33
90	34
74	38
65	39
58	41
50	43
50	44



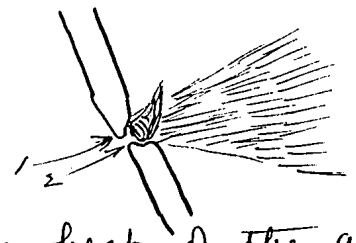
On the low setting the amps are about 60 with 30 to 33 volts across arc. This seems to be just about right.

On the high setting the current runs about 95 to 100 amps with 30 to 32 volts across the arc — it seems then that the high setting is too high and can be cut down by ~~making~~ stopping the plug movement a little earlier.

I adjusted the ~~arc~~ transformer so as to get 80 amps. with 32 volts but had much trouble, the arc is very unsteady. It acts as though the carbons are not large enough.

This is hardly the case as 1" carbons are generally considered large enough for 75 to 100 amps A.C.

There is one inherent trouble with the arc which no doubt causes most of the trouble



The heat of the arc seems to draw it forward to the front of the carbons where the length of arc and hence the voltage increases while current is decreased.

Then when it is desired to increase current; to feed carbons together the ~~two~~ points 1 and 2 ~~come together~~ touch with consequent results.

This is not a fault of transformer — it seems to be a combination of carbons and angle of arc lamp

combined with the inherent unsteadiness of the a.c. arc which latter evidently increases with the size of the arc i.e. current or amperes.

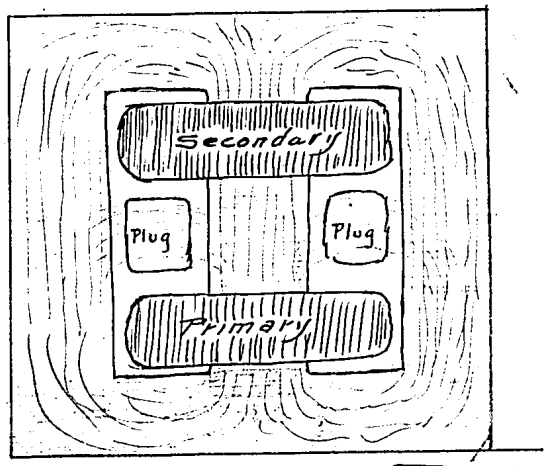


Diagram of Edison Transformer.
Shaded portion - Iron Magnetic Circuit -
Red lines - Magnetic lines
Plugs - iron plugs for ~~distorting~~ by passing part of magnet lines from secondary winding
The plugs are movable by means of handle on top.
The leakage thru them depends upon their position in the magnetic field -

Condenser Mounts.

1. Regular.
2. Heavy Brass
3. Plate Glass Protector.

Model B Lamp House - 3 condenser cones.

Vertical arc - 4 1/4" from each condenser.

Alternate Heating and Cooling
Heating 15 to 20 minutes
Cooling - until cool about 1/2 hour or more.

1st Heat	all OK	
1st Cooling	" OK	
2nd Heat	" "	
2nd Cooling	" OK	
3rd Heat	" OK	
3rd Cooling	(1)	6 1/2" inside condenser on regular mount broke
	(2)	Heavy Brass - OK
	(3)	Plate glass broke.
4th Heat	(1)	Inside cond. on reg. broke
	(2)	OK
	(3)	OK

4th Cooling – ① already broken from heat
② O.K.
③ Plate glass broke.

5th Heat ① OK
② OK
③ O.K.

5th Cooling ① OK
② OK
③ Plate glass broke

6th Heat ① OK
② OK
③ OK

6th Cooling ① OK
② OK
③ Plate glass broke.

Out of plate glass – this plate glass was special annealed procured from Eimer and Amend and about 1/16" thick – apparently no better than unannealed.

12-4-14
7th Heating ① OK
② OK

7th Cooling ① OK
② OK

Remarks Dec. 4th, 1914 after 7th cooling.

From all tests made to date it seems that any plate glass placed between arc and condensers while protecting the condensers to a certain extent is too liable to breakage itself requiring constant renewals. Hardly practical.

The Heavy mounts to-date undoubtedly show superiority over old mounts.

8th Heating ① O.K.
② O.K.

8th Cooling ① OK
② OK

9th Heat. ① OK
~~② OK~~ ② OK

9th Cooling ① Broke
② O.K.

Transformer for Supekinetoscope.

Some Readings

Low scale -

Open circuit 54 volts.

Frozen carbons 20 v. - 88 a.

Amps.	Volts	
60	36	1/8" Arc
60	35.5	
64	33	
61.5	35	
59.5	36	

We had considerable trouble with large (1") carbons were unable to get a clear spot on screen - presence of ghosts. -

At 60 amperes the current does not seem to be enough to heat up the whole area carbon. -

3/4" was much better on 60 amps and even good on 80 tho hardly large enough for the latter.

1" seems to be too large for 80.
Probably a 7/8" diam would be correct.
3/4" seem to be plenty large enough for 60 amps and give a steady efficient light.

Ratio.

	Primary		Secondary	
Set	V.	A	V.	A
60	122	—	56	—
"	123	—	56.5	—
"	104.5	29.	34	62
"	105	28.4	33	60
"	106.5	28.25	33	60
80	94	41	34.5	88
Changed	106.5	37.5	37	81
"	107.0	37.5	36.5	82
"	99	35	36	76

I want to try 1" carbons with 80 amps. as I did not have correct position of lamp house - it was not back far enough.

I want to set amps at 80 with 33 volts at arc this can be done with adj. on transformer I think - tho I was unable to get it -

The arc with 1" carbons has not been satisfactory. These carbons are too large for 60 amps and seem to be even too large for 80 amps

Received for Test Dec. 1st/14.

A reel of renovated film
Subject (a Great Newspaper).
This is to be run on
wear Test.

Dec. 7, 1914.

Joe McLean worked with Mr. Gale on Superkinetoscope.

They had trouble with automatic cut out and the take up on 2000' ~~X~~ reel.

They tried one new film catch on 2000' reel and Mr. Gale thinks it O.K.

On hand Dec. 11/14.

A-150 Mahog. 9891
A-150 " " 9869

Amb. X 29033
" X 28967

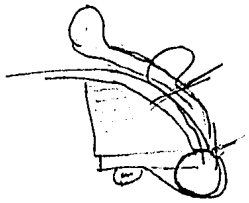
Amb. VIII 9895
" " 9804

Amberola IV - 5415.

Disc Reproducers.
3 complete trays 28 in a tray (2 good) 1 oxidized.
1 tray nickel 1 missing

3 x 28 = 84
1 x 27 = 27
111

Extra reproducers -
46156 gold
47129 gold
28009 nickel
49494 nickel.



Mary Amirault
1 Tompkins St,
W. Orange.

Dec. 9th - 530